Illinois Department of Transportation

Memorandum

To:	ALL BRIDGE DESIGNERS	00.3
From:	Ralph E. Anderson	Ralph E. Anderson
Subject:	Pot Bearings	
Date:	August 1, 2000	

This bridge memorandum supersedes previously issued Bridge Memorandum 99.3.

The Department's special provision for Floating Bearings describes the various types of floating bearings as well as the material, fabrication, installation and testing requirements. The intent of this memorandum is to provide designers with additional guidance on proper contract plan details and specific design criteria for pot bearings.

Floating bearings may be provided as either pot or disc bearings. The three types of floating bearings are fixed, guided expansion and non-guided expansion. The attached figures are illustrative examples of typical contract plan details for these various types of pot bearings. A non-guided expansion pot bearing is rarely applicable and is reserved for very unique circumstances. It would be detailed similar to the guided expansion pot bearings except without the guide bars. Inverted pot bearing configurations are not permitted.

The designer shall provide the following information on the contract plans:

- Vertical Design Load - Total axial DL + LL without impact
- Lateral Design Load (only when it exceeds 20% of the Vertical Design Load)
- Total Required Movement
- L - Transverse length of piston
- D - Outside pot diameter
- T_t - Thickness of top plate
- T_b - Thickness of bottom plate
- T_h - Total height of bearing assembly

Plate thicknesses T_t and T_b shall be determined according to Figure 3.5.4-17 of the Bridge Manual. T_t shall be calculated based on the "L" dimension shown and T_b shall be calculated based on the diameter "D" dimension shown.

It is the designer's responsibility to verify the pot bearing dimensions and geometry with producers who do work in Illinois. The overall bearing height and plate thicknesses stated on the plans shall be chosen so that more than one producer is capable of bidding on the project.

Most supply companies for pot bearings use standardized bearing dimensions which are designed to provide a lateral resistance of 20% of the total axial load capacity. If the Lateral Design Load exceeds 20% of the Vertical Design Load, the designer should not select a larger pot bearing to satisfy the lateral load requirement. Rather, designers should select pot bearing sizes based on the Vertical Design Load and the fabricator shall be responsible for modifying any necessary components of the bearing to meet the lateral load and expansion length demands.

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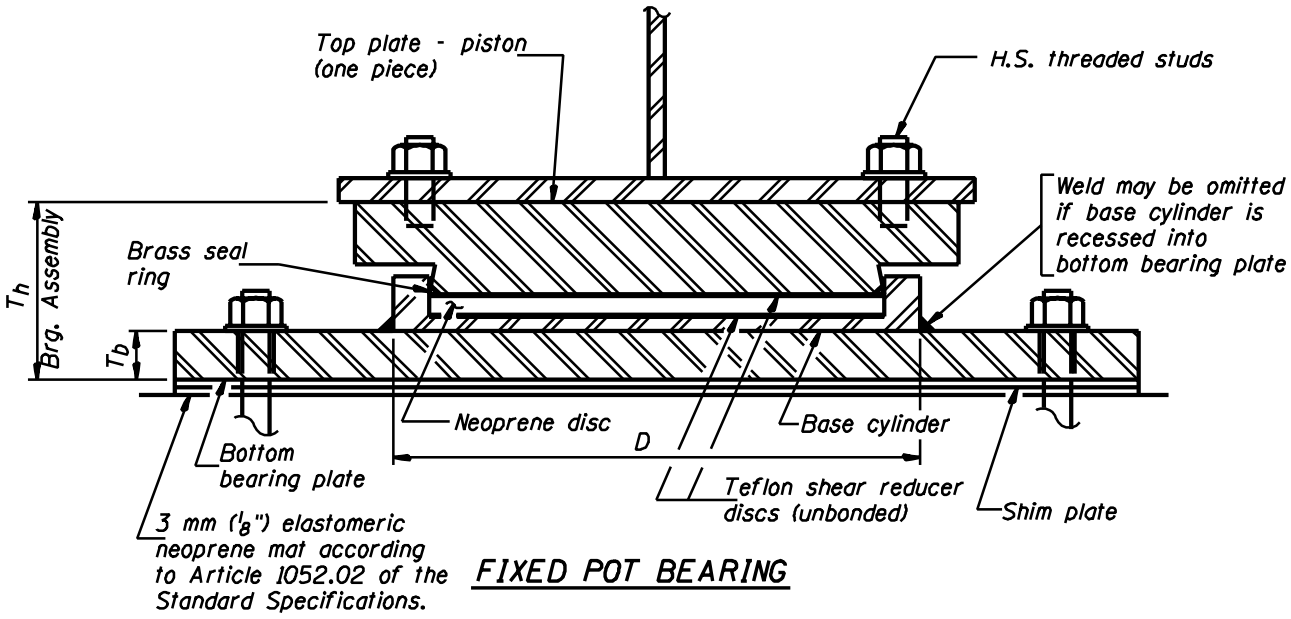
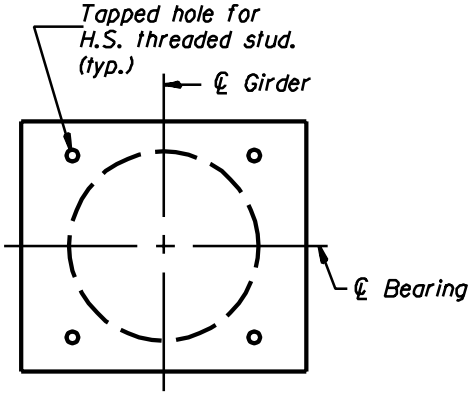
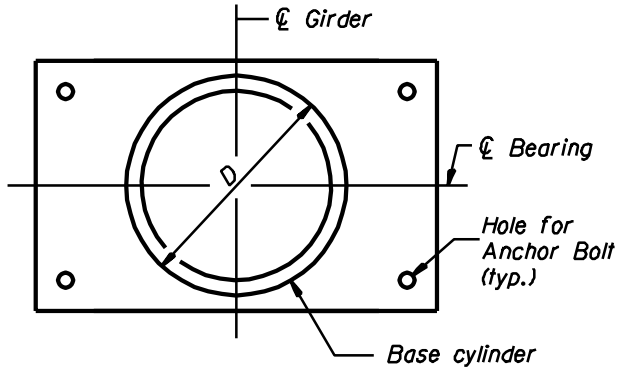


FIXED POT BEARING



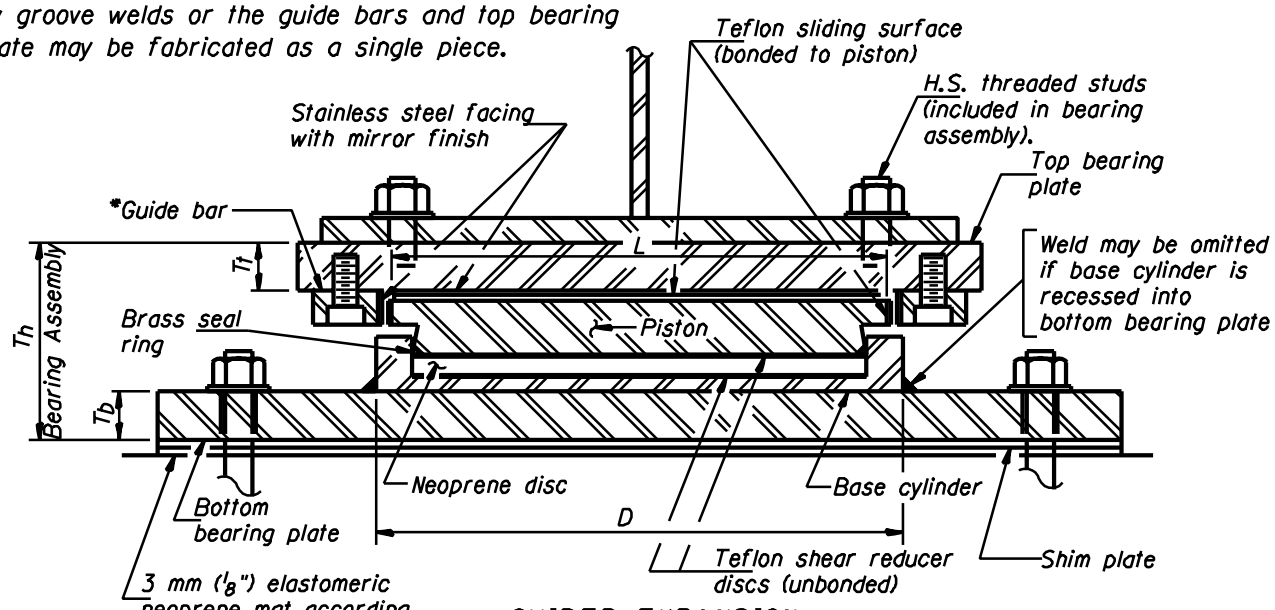
TOP ℄ - PISTON PLAN



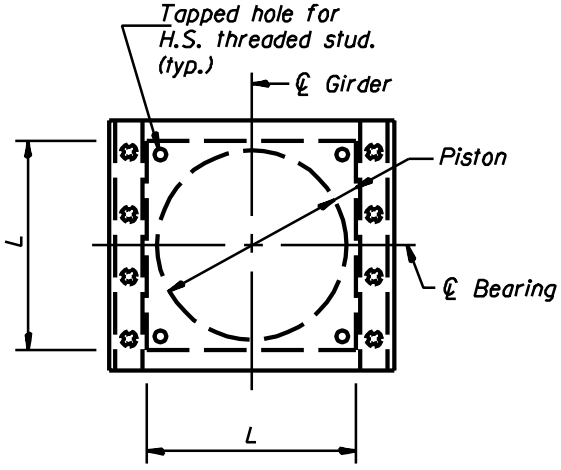
BOTTOM BEARING ℄ AND BASE CYLINDER PLAN

FIXED POT BEARING

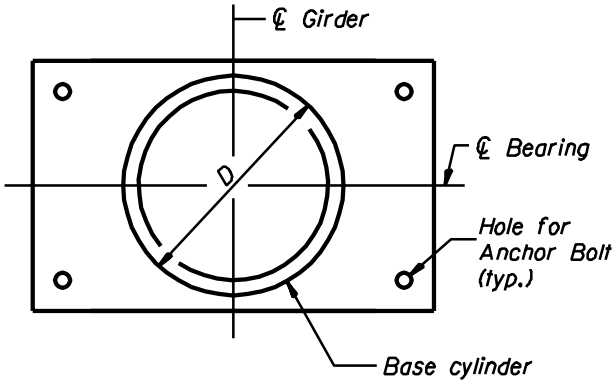
*As alternates to the bolted connection shown, the guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece.



GUIDED EXPANSION POT BEARING



TOP BEARING ℄ AND PISTON PLAN



BOTTOM BEARING ℄ AND BASE CYLINDER PLAN

GUIDED EXPANSION POT BEARING